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TORNADOES IN OKLAHOMA, 1875–1949

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INTRODUCTION

Three outstanding tornado records, one in each of the past 3 years, were established in Oklahoma. In 1949, 58 tornadoes occurred, by far the greatest number for any year in the State. In 1948, two tornadoes only 5 days apart (on Mar. 20 and 25) struck Tinker Field near Oklahoma City with extensive damage to aircraft. Losses from the March 20 tornado were estimated at $10,250,000, the greatest loss to property for any single tornado in Oklahoma. On March 25, property loss was estimated at $6,100,000, the third greatest loss to property. The most disastrous storm ever to strike in this section of the country occurred on April 9, 1947, when a tornado swept over a 221-mile path from White Deer, Tex., through northwestern Oklahoma, and into Kansas. In the 3 States, 169 persons were killed, 980 were injured, and property damage was estimated at $9,700,000. Principal damage by this storm was at Woodward, Okla., where 95 persons were killed, and over $6,600,000 damage occurred.

These record-setting storms resulted in considerable publicity for tornadoes in Oklahoma, and brought many requests for data on previous tornadoes in the State. As previous data were not complete, a detailed tabulation was prepared by the writer at the Weather Bureau Office, Oklahoma City. All sources of information at the Weather Bureau Office were used and a number of items were checked in early newspapers on file at the Oklahoma Historical Society as well as newspapers in the file room of the Daily Oklahoman and Oklahoma City Times. A number of references were also obtained from the Library at the Weather Bureau Central Office in Washington. While the tabulation is detailed, and is complete as far as is known, additional tornadoes likely occurred, especially in the earlier years, for which no record was published.

The original tabulation covering the years 1875–1947 was made following the catastrophe in 1947; it was recently extended to include the tornadoes of 1948 and 1949. It is the purpose of the present paper to present the following brief summary of the detailed tabulation.[1]

SUMMARY OF TORNADO DATA

Table 1 lists the number of tornadoes and the resulting deaths, injuries, and estimated property losses for the period from 1875 through 1949. In all, 469 tornadoes were listed, 924 lives lost, and more than 4,106 persons injured. Property losses were estimated to total more than $51,400,000, not including damage which could not be estimated for many of the tornadoes of the early years.

It is pointed out that data of earlier years and recent years are not comparable. This may be due to a number of reasons. In the early days many tornadoes would go by unnoticed due to the sparsity of population, or unreported due to lack of communication facilities. The chances that a tornado will cause death and injury are much greater now that the population has increased many times. There is also a great increase in the amount and valuation of property. An example that shows that much greater losses would occur in more recent years, is the

[1] The detailed tabulation gives place, date and time of occurrence, direction of movement, length and width of path, loss of life and property, injuries, and other items of interest for each tornado reported in Oklahoma during the period 1875–1949. The tabulation, "Tornadoes in Oklahoma, 1875–1949," which is in manuscript form, is on file in the Weather Bureau Office, Oklahoma City, Okla., and in the Weather Bureau Library, Washington, D. C.

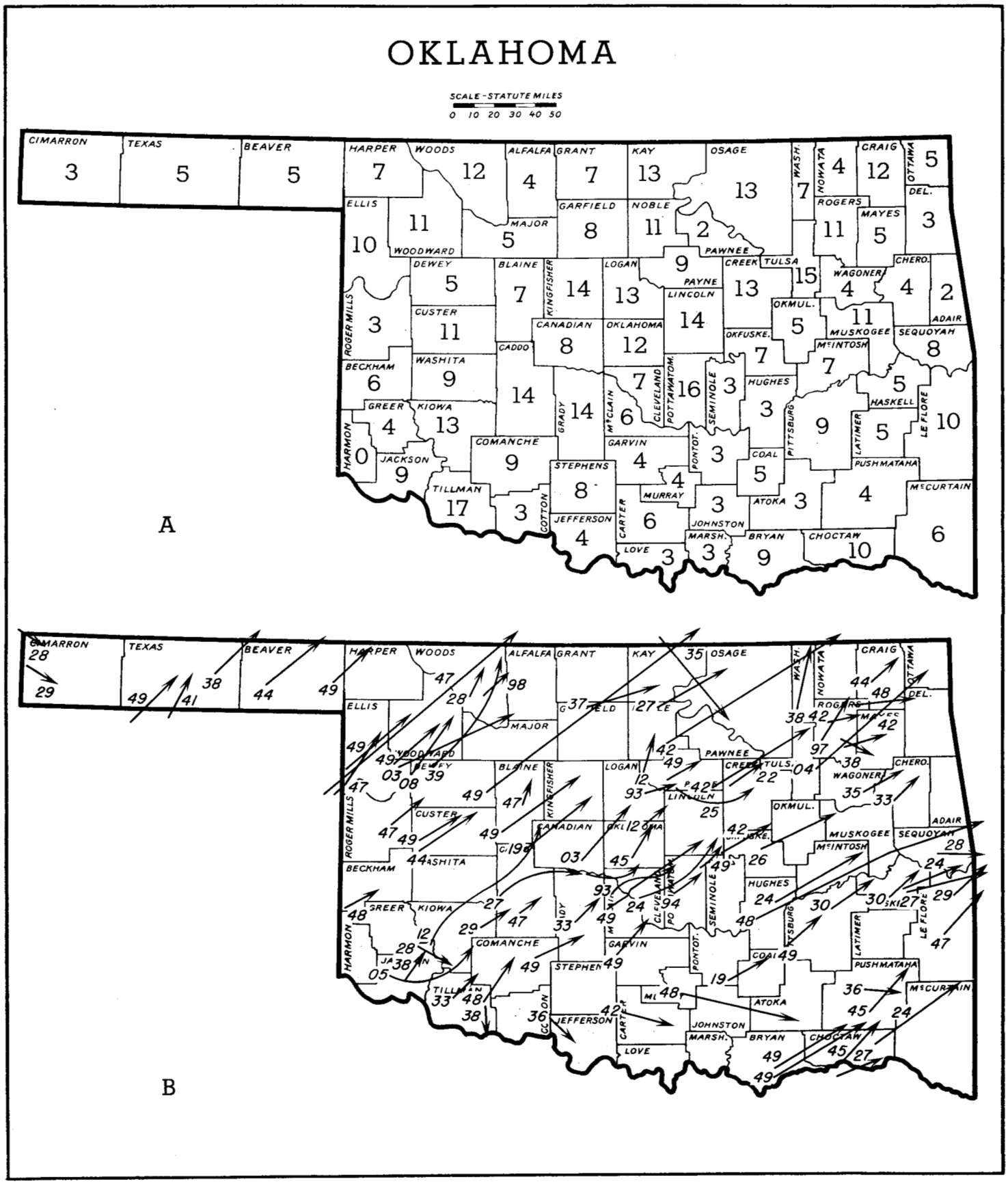

FIGURE 1.—(a) Number of times tornadoes have been recorded in each county in Oklahoma, 1875–1949. (b) Tornado paths 15 miles or longer, 1875–1949. Number by each path indicates last two digits of year of occurrence; arrow shows direction of movement. Widths of paths are not drawn to scale.

TABLE 1.—*Number of tornadoes, deaths, injuries, and property losses by years in Oklahoma, 1875–1949**

Year	Number of tornadoes†	Deaths	Injuries	Property losses
1949	58	16	168	$4,035,060
1948	19	17	264	17,506,000
1947	12	111	812	9,356,000
1946	10	2	19	1,279,500
1945	18	104	725	4,550,100
1944	22	3	74	778,500
1943	8	4	25	63,200
1942	15	114	**250	2,687,300
1941	8	1	10	216,000
1940	5	0	5	52,450
1939	1	7	19	104,000
1938	13	0	27	305,112
1937	6	4	18	266,500
1936	21	20	140	410,325
1935	15	1	49	312,280
1934	11	4	49	340,100
1933	10	11	56	410,500
1932	2	0	0	255,000
1931	3	4	8	85,000
1930	19	35	94	649,600
1929	11	3	5	511,500
1928	8	10	34	1,583,000
1927	11	20	87	547,500
1926	4	8	64	239,000
1925	8	2	11	101,000
1924	7	25	106	1,308,000
1923	9	2	15	112,500
1922	9	23	87	1,050,000
1921	1	0	0	75,000
1920	5	64	89	385,000
1919	8	25	70	545,000
1918	3	3	5	(1)
1917	19	36	121	(1)
1916	4	9	28	(1)
1915	0	0	0	0
1914	1	0	0	50,000
1913	0	0	0	0
1912	13	29	95	**643,525
1911	5	10	85	132,000
1910	2	2	4	15,000
1909	4	4	11	(1)
1908	8	9	45	(1)
1907	0	0	0	0
1906	0	0	0	0
1905	8	105	109	284,000
1904	3	5	31	(1)
1903	8	4	36	(1)
1902	0	0	0	0
1901	0	0	0	0
1900	0	0	0	0
1899	2	0	Several	(1)
1898	5	2	24	(1)
1897	2	15	48	103,000
1896	10	5	**8	[2] 300
1895	0	0	0	[2] 0
1894	3	1	Many	[2] 2,000
1893	5	40	**25	[2] 60,000
1892	1	1	3	[2] 2,000
1891				
1890				
1889				
1888	1	0	Small number	
1887				
1886				
1885	1	0	0	
1884	1	0	0	
1883				
1882	2	4	48	
1881				
1880				
1879				
1878				
1877				
1876				
1875	1			
Total	469	924	**4,106	**51,411,852

*Complete as far as is known, but additional unrecorded tornadoes probably occurred in the earlier years.
†Straight line damaging winds not included.
** Plus additional numbers or losses.
[1] Considerable damage, monetary amount not determined.
[2] Losses as reported by A. J. Henry in his article, "Tornadoes, 1889–96" in Report of Chief of Weather Bureau, 1895–96.

tornado of considerable force that cut a path 6 miles long from a point 3 miles northwest of downtown Oklahoma City to a point 2 miles south of Britton, Okla., on May 12, 1896. This tornado caused no injuries and only $300 property damage. It would be difficult to imagine the death and damage that would result if such a well developed tornado struck in the same path 50 years later, going through this residential area where many of the finest homes in Oklahoma City are now located.

For the last 30 years, 1920 through 1949, the data are more comparable. During these years, tornadoes occurred on an average of 11 per year, with average annual losses of 20 deaths, 112 injuries, and about $1,600,000 property damage. The greatest number of tornadoes in any year was 58 in 1949. Only one tornado occurred in each of the years 1921 and 1939. Death losses per year ranged from none in four of the last 30 years to 114 in 1942. There were no injuries in 1921 and in 1931; there were 812 persons injured in 1947. Property damage per year for the past 30 years ranged from about $50,000 in 1940 to more than $17,500,000 in 1948.

Figure 1 (a) shows the number of times tornadoes have been recorded in each county. Tornadoes that moved through two or more counties were recorded for each county affected. For those storms that occurred before the present county boundaries were established, the location was used to determine in which of the present counties it would have occurred. All sections of the State have experienced tornadoes with the exception of Harmon County in the extreme southwestern part of the State. The greatest number of tornadoes recorded in any county is 17 in Tillman County; there have been 16 in Pottawatomie County, and 15 in Tulsa County.

Table 2 lists the number of times tornadoes have occurred in each month. About two-thirds of all tornadoes occurred between April 8 and June 9. May, with 162 occurrences, is the month in which tornadoes occurred most frequently, followed by April with 111. Tornadoes have occurred every month of the year in Oklahoma, although only three have been reported in December.

TABLE 2.—*Tornado occurrences in each month in Oklahoma, 1875–1949.*

January	February	March	April	May	June	July	August	September	October	November	December	Total
14	10	50	111	162	68	7	7	9	16	12	3	469

Tornadoes have occurred every hour of the day in Oklahoma, but most frequently (about three-fourths of the time) between 2 p. m. and 9 p. m., local time. They are least likely to occur in the early morning between 4 a. m. and 9 a. m., although several of the more severe tornadoes that have occurred in the fall and winter in Oklahoma struck between midnight and noon.

TABLE 3.—*Tornadoes in Oklahoma causing greatest loss of life (number injured in these storms also listed)*

Principal place or places	Date of tornado	Number dead	Number injured
Ellis County and Woodward	Apr. 9, 1947	*101	*782
Snyder	May 10, 1905	97	58
Antlers	Apr. 12, 1945	69	353
Peggs	May 2, 1920	60	80
Pryor	Apr. 27, 1942	52	181
Oklahoma City	June 12, 1942	35	29
Southwest of Moore	Apr. 25, 1893	31	Many
Bethany	Nov. 19, 1930	23	77
Childsville	May 2, 1942	16	Many
Richville, Vireton	Jan. 4, 1917	15	8 or more
Lugert, Hobart, Colony, Calumet	Apr. 27, 1912	15	39
Chandler	Mar. 30, 1897	14	40
Muskogee	Apr. 12, 1945	13	113
Roberta, Durant	Apr. 9, 1919	*11	*20
Colgate	June 1, 1917	11	75
Gowen	Mar. 13, 1922	10	24

*Additional number dead and injured in adjacent States.

TABLE 4.—*Tornadoes in Oklahoma causing an estimated property loss of $1,000,000 or more*

Principal place or places	Date of tornado	Estimated property losses
Tinker Field	Mar. 20, 1948	$10, 250, 000
Ellis County and Woodward	Apr. 9, 1947	*8, 022, 750
Tinker Field	Mar. 25, 1948	6, 100, 000
Pryor	Apr. 27, 1942	2, 000, 000
Antlers	Apr. 12, 1945	1, 525, 000
Blair and Headrick	June 16, 1928	(in excess of) 1, 500, 000
Muskogee	Apr. 12, 1945	1, 400, 000
Oklahoma City	do	1, 000, 000
Leedey	May 31, 1947	(in excess of) 1, 000, 000
Ardmore	Feb. 13, 1946	1, 000, 000

*Additional losses in Texas and Kansas.

Direction of movement of tornadoes is usually toward the northeast, less frequently east or southeast. Occasionally tornadoes travel in some other direction. They usually travel in a straight path, although sometimes they change direction. The disastrous tornado that struck Oklahoma City in June 1942, which was observed by many persons including Weather Bureau Airport personnel, followed a path almost a half circle curving from the southeast to the southwest, then east, then north. A tornado in Caddo County in June 1949 circled an area of 1 mile radius. In May 1949, a tornado approached the town of Schulter from the southwest, then after it struck the town it appeared to move out of town in a southeast direction.

Tornado paths are usually short and less than 10 miles in length although paths of over 50 miles have occurred a number of times. The Woodward tornado in 1947 had a path 101 miles long in Oklahoma alone, while the Pawhuska storm in 1942 was 100 miles long. Figure 1 (b) shows tornado paths 15 miles or more in length. Length, direction of movement, and year of occurrence are indicated.

Tornadoes are localized in nature, usually covering a very limited area. Most of these "twisters" are less than 440 yards wide, although paths over 2 miles in width have been reported. The tornado path at Woodward on April 9, 1947, was 1.8 miles wide.

Chances for experiencing a tornado are slight. For example, in the last 60 years, there have been 12 tornadoes in Oklahoma County affecting a total area in these 60 years of less than 14 square miles. Tornadoes do not seem to follow any particular pattern or paths although they may strike the same area more than once. In Ellis County in 1947, five farmsteads, partially rebuilt following the April 9 tornado, were wrecked again when another tornado visited the same area on May 31 that same year. The two destructive tornadoes in 1948 that struck Tinker Field were only 5 days apart.

Table 3 lists tornadoes causing 10 or more fatalities, together with the number injured in each storm. Table 4 lists those tornadoes for which property losses were estimated at $1,000,000 or more. It is interesting to note that those causing the greatest property damage occurred in recent years. This can be attributed to the increase in amount and valuation of the property that could be destroyed.

TORNADO "FREAKS"

As may be expected, tornadoes often leave objects in grotesque positions; human reactions to the effects of the tornado and accounts of miraculous escapes are often published. After nearly every major tornado disaster, a number of strange happenings are described by observers. These "freaks" of the storm usually are of one of the following types:

1. The "stripping" effect. A common happening has been for chickens to be left, either alive or dead, without feathers. Persons, living or dead, have had much of their clothing removed. Harnesses have been taken off horses. Trees have been stripped of their limbs and even their bark. "Cats without fur, and dogs without hair" were found after the Snyder tornado.

2. The "scattering" effect. Parts of the same building have been found miles apart. In the Woodward tornado, bodies of two persons, known to have been together, were found 2 miles apart amidst the wreckage of the home in which they were. It has been a common occurrence to find objects miles away from the place where they were picked up by the storm.

3. The "selective" effect. It has been often noted that some objects are carried away while lighter objects next to them are left untouched. Reports have been made of incidents such as that which occurred in the Bethany tornado when a man was unharmed while the chicken house in which he was standing was blown away, and all the chickens were killed.

4. The "carrying" effect. Living creatures, from babies to large horses, have been picked up by the tornado, carried in the air for some distance, and set down unhurt.

5. The "driving" effect. The common occurrence of having straws or shingles driven into boards and trees has been related a number of times. Straws have even been driven into automobile tires between the casing and the wheel.